TCP PERFORMANCE EVALUATION IN A VSAT LINK

This dissertation was submitted to the Department of Electronic & Telecommunication Engineering, University of Moratuwa in partial fulfillment of the requirements for the Degree of M.Sc. in Telecommunications

Department of Electronic & Telecommunication Engineering
University of Moratuwa

Supervisor
MR. KITHSIRI SAMARASINGHE

K.M. FERNANDO

2009

Abstract

The Transmission Control Protocol (TCP) is the mostly used protocol for data transmission over networks. However, TCP's congestion control algorithm wasn't created to match the special characteristics of satellite links, resulting in a drastically performance degradation. TCP appears in different algorithm versions, all with different features but with maximal throughput as their main objective. The aim of this paper is to evaluate and compare six TCP versions, which are Tahoe, Reno, New Reno, Sack, Fack, and Vegas, when applied over GEO satellite VSAT links in TCP connections, using Ns-2 simulation. Suitable scenarios based on a GEO bent-pipe satellite have been implemented. I evaluate the performance of the above mentioned TCP versions over GEO VSAT-based satellite links and compare it with the performance of a real VSAT link. **It** was found that the flow and congestion control mechanism used in some of TCP versions were unable to reach full utilization on VSAT link speeds.

Keywords: Transmission Control Protocol (TCP), Very Small Aperture Terminals (VSAT),TCP Tahoe, TCP Reno, TCP Sack, TCP New Reno, TCP Sack, TCP Vegas, TCP Fack.